

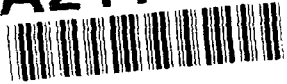
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RESEARCH REPORT

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THE PACIFIC DISTRIBUTION SYSTEM

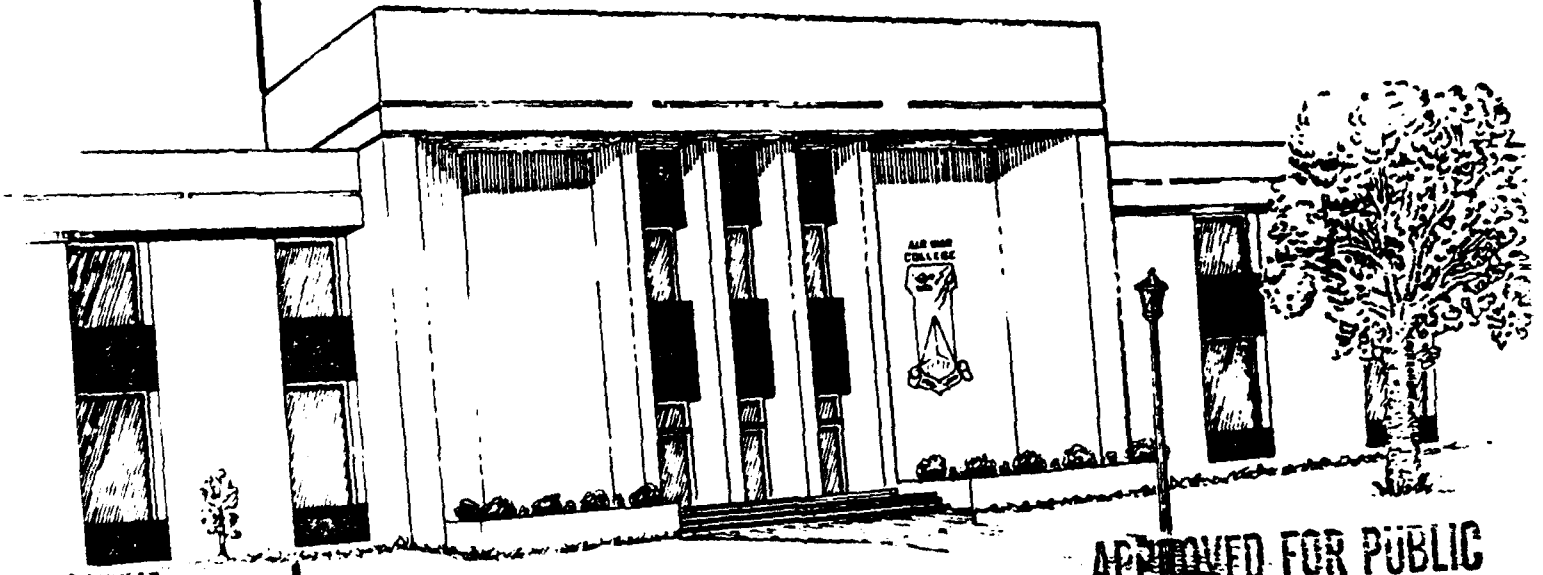
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1990



AIR UNIVERSITY
UNITED STATES AIR FORCE
MAXWELL AIR FORCE BASE, ALABAMA

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THE PACIFIC DISTRIBUTION SYSTEM

by

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Lt Col, USAF

A DEFENSE ANALYTICAL STUDY SUBMITTED TO THE FACULTY

IN

FULFILLMENT OF THE CURRICULUM

REQUIREMENT

Advisor: Lt Col Peyton P. Lumpkin

MAXWELL AIR FORCE BASE, ALABAMA

April 1990

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EXECUTIVE SUMMARY

This paper tells the story of the Pacific Distribution System (PDS). Designed to enhance combat readiness and sustainability, PDS was a logistics initiative consisting of three interrelated elements: forward stockage of selected items in the Pacific theater, assured airlift distribution capability, and logistics command, control, and communications (LOG C3) system. The system was inaugurated in October, 1987, with a squadron of six C-12Fs for airlift. Forward stockage began in early 1988; however, the LOG C3 system was never funded.

Following a critical General Accounting Office report on PDS during its implementation period, Congress failed to support continuing the program. Funding for PDS has since been withdrawn.

This action does not grasp the significance of the PDS concept. In today's environment of limited and expensive parts and repair capabilities for our aircraft, a responsive and assured distribution is all the more important. Getting the right parts to the right base at the right time is critical. In today's peacetime environment there is no shortage of MAC airlift for this task; however in the first days of a conflict such airlift will be in high demand. The PDS concept uses small airplanes for moving parts critical to aircraft repair and leaves the larger airlifters for more demanding roles.

BIOGRAPHICAL SKETCH

Lt Col McClure graduated from the USAF Academy in 1971 with a BS in Engineering Sciences and entered pilot training at Reese AFB, TX. In 1972 he was assigned to the Pacific theater where he flew C-130's in SEA while being stationed at Ching Chang Kung AB, Taiwan and Clark AB, RP. In 1978 Lt Col McClure went to Korea as a tactical airlift liason officer to U.S. and Korean Army forces. Returning to the U.S. in 1979, he was assigned to the C-130 RTU at Little Rock AFB, AR and in 1982 to HQ MAC/DOT as chief of tactical airlift formal training. After graduation from the Army Command and General Staff College he went to HQ USAF/X00TA as the C-130 program element monitor and tactical airlift action officer. In 1987 Lt Col McClure returned to the Pacific as the commander of the C-12F squadron at Kadena AB, JA. Lt Col McClure is a graduate of Air War College, Class of 1990.

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CHAPTER I
INTRODUCTION

It is 0200 local, D+1, at Kwang Ju Air Base (AB), Republic of Korea. The night shift is repairing, refueling, and rearming its squadron of F-15 Eagles. The squadron's air tasking order calls for 63 sorties of offensive counter air beginning at 0530 local. The air component commander, through the Korean Tactical Air Control System and its tactical fighter wings is ready to fight another battle against the invading North Koreans. Despite heroic efforts by dedicated maintenance troops, three jets are still down for critical parts; an inertial navigation unit, an internal countermeasures unit, and a radar transmitter. The only cannibalization birds at Kwang Ju have already been stripped.

Quickly the logistics system swings into action and finds the closest spares at Kadena, having just been repaired the day before in the F-15 avionics shop. The next scheduled MAC flight from Kadena to Kwang Ju arrives at 0900 local - too late! The senior controller contacts the Korean Airlift Control Center for an earlier flight only to find out all the alert C-130's have been committed to aeromedical evacuation missions that night. All other C-130's are already dedicated to Army and Marine support early that morning. However, a C-12F currently inbound to Kadena is capable of being reflagged to Kwang Ju with a 0500 local arrival. The three jets may yet join the fight.

The C-12Fs, deployed worldwide in an operational support airlift (OSA) role are well known for their passenger carrying capability. With a few minor modifications they are also capable of transporting a vast array of spare parts for various weapon systems and associated support equipment. This capability, when properly organized and controlled, is a cost effective augmentation to MAC's normal cargo carrying capabilities. Beginning 2 October 1987, PACAF began using MAC C-12Fs for transporting these high priority spare parts. The system was called the Pacific Distribution System and it was designed to increase PACAF's war fighting capability. Regrettably, the system aborted before it could reach full speed.

This article tells the Pacific Distribution System (PDS) story by answering the following questions: What was PDS? How well did it work? Why was it stopped? Is such a system still beneficial? The answers to these questions clearly point out the need for reestablishing the PDS as a cost effective combat force multiplier.

CHAPTER II

WHAT WAS THE PACIFIC DISTRIBUTION SYSTEM?

PACAF's peacetime fighter forces consist of five tactical wings operating in three different countries. This force structure would expand and disperse for given contingency scenarios. The original PACAF PDS study in 1984 focused on a centralized PACAF Logistics Support Center (PLSC) at Kadena AB, Japan which performed a major portion of the theater's intermediate level maintenance requirements. The PLSC consisted of maintenance, supply, and transportation functions. The Logistics Readiness Center (LRC) at the PLSC managed distribution and redistribution of assets through manual tracking techniques. MAC provided air transportation on regularly scheduled C-141 and C-130 channel missions. The air transportation element was particularly significant because of the vast distances in the Pacific theater, mostly over water. Although the system worked, it was cumbersome and inefficient.(1)

The PDS study concentrated on minimizing aircraft downtime by locating and moving critical fighter parts in a more timely manner. In other words, develop a system which reduces the time from when a mechanic removes a defective part until he is provided with a new part to get the aircraft flying again.

The study concluded that optimum aircraft generation required a theaterwide, integrated logistics distribution

system. In wartime, this system could generate up to 24 additional fighters a day representing 67 to 80 more combat sorties. In peacetime, wings would realize higher mission capable rates due to a two or three day spares movement time versus the then current six days. They would also have real time asset management information for making logistics decisions.(2)

Implementing the solution required the integrated efforts of AFLC, MAC, and PACAF. The PDS proposal consisted of a logistics command, control, and communications (LOG C3) network, centralized forward stockage of selected spare parts, and a highly responsive assured airlift capability.

The LOG C3 system would provide current theaterwide status of critical assets in the PACAF supply inventory to the PLSC/LRC, each operating location, transportable shelter systems during deployments, and in wartime to the activated resource management centers. Using available military and commercial circuits, this integrated network of PDS computers, terminals, and printers could identify, source, direct transport, and track movement of mission essential items. The Defense Data Network (DDN) would be the primary means of communications although there would be system flexibility accommodating possible DDN outages. This real time information network would help management quickly solve spare parts logistics problems.(3)

The second element of PDS created a theater warehouse on Okinawa for centralized stockage of selective wholesale assets

from AFLC, Defense Logistics Agency (DLA), and General Services Administration (GSA). AFLC, PACAF, and other affected major commands would use demand data for identifying wholesale assets in stateside depots for forward stockage in the Pacific theater. Actual stockage decisions would be made in concert with AFLC, DLA, and GSA. A forward stockage computer system would provide for stock location and inventory control. Moving these essential spare parts closer to the user would reduce the 13 day average order and ship time from the continental U.S. to Okinawa.(4)

The third part of the PDS was assured airlift capability. A squadron of six C-12Fs, diverted from MAC's OSA fleet, were based at Kadena AB, Japan. They would provide rapid and responsive movement of mission essential spare parts to and from the PLSC at Kadena and the forward operating locations throughout the Pacific theater as well as lateral support between these operating locations.(5)

The number and type aircraft were the result of a 1983 PACAF study on the magnitude of the requirement for moving repairable aircraft parts during the first ten days of a contingency in the Pacific theater. A total of 978 items were analyzed in PACAF war readiness spares kits (WRSK) and base level supply sufficiency (BLSS) kits for F-4E, F-4G, RF-4, F-15, and F-16 aircraft. The analysis found 86 percent of the items were less than five cubic feet in volume and 92 percent weighed less than 75 pounds. Most of these items were line replaceable

units (LRUs) and shop replaceable units (SRUs) and did not include aircraft engines.(6) These criteria easily matched the cargo loading and carrying capabilities of the C-12F. Further analysis on cargo loads, sortie requirements, and aircraft performance determined four to six cargo configured C-12Fs were required to satisfy this ten day contingency study.(7)

MAC would operate these C-12Fs as part of the 834th Airlift Division (ALD). CINCPACAF/LG, through the PLSC/LRC, would have mission tasking authority. Recognizing that the bulk of PACAF's logistics requirements would necessarily be met by larger C-141 and C-130 aircraft, the PDS C-12Fs provided the best combination of airlift capability and support costs for the additional assured distribution requirement.

In the words of Major General Spiers, then PACAF/LG, "When integrated, these three elements of the PDS would improve tactical air operations by increasing sortie rates through the timely movement of these critical parts which cause grounding conditions."(8) A simple peacetime scenario can best portray the PDS concept of operations.

A Kunsan F-16, deployed to Clark AB for a Cope Thunder exercise goes non mission capable for supply (NMCS). The deployed maintenance team enlists PLSC/LRC support in locating the required mission capable (MICAP) part. Through the LOG C3 system they determine the nearest available part is at Kunsan. The PLSC/LRC then combs the published MAC airlift schedule for a flight or combination of flights from Kunsan to Clark while

simultaneously directing Kunsan to process the part for air transportation. The schedule shows today's only flight through Kunsan departed several hours earlier; however, there is a C-141 scheduled from Kadena to Clark departing in five hours. In addition, there is a regularly scheduled C-12F mission currently on the ground at Osan. The PLSC/LRC contacts the Osan MAC Command Post and refrags the C-12F mission for an immediate departure, through Kunsan to pick up the part, then to Kadena. The PLSC/LRC also coordinates with Kadena aerial port expeditors for the pick up of the part and transfer to the awaiting C-141 destined for Clark.

Without PDS, the part would have moved the next day on a regularly scheduled MAC flight thru Kunsan and most likely been transferred onto another MAC flight at Kadena. Current MAC channel airlift could satisfy the airlift requirement but not with the responsiveness and flexibility of the PDS.

CHAPTER III
HOW WELL DID IT WORK?

That was the vision for the PDS. How well did it work in reality? Inaugurated on 2 October 1987 by Lieutenant General McDonald, HQ USAF/LE and Major General Spiers, then HQ PACAF/LG the initial system grew rapidly even though it had not yet been fully funded or developed.

The original LOG C3 concept was programmed for contract award in January 1988 when Congress withdrew its FY88 funding. Problems were surfacing with a similar computer system serving the European Distribution System (EDS), and the PDS LOG C3 program was put on an indefinite hold pending resolution of the EDS problems.

Forward stockage did become a reality. Using existing facilities on Kadena AB, AFLC began stocking items in April, 1988. Without the LOG C3, manual tracking procedures were required which limited the buildup of wholesale assets. PACAF renamed the facility the Pacific Parts Store and AFLC continued building up its assets based on supply requirements.

MAC provided the assured PDS airlift by activating a new unit, the 13th Military Airlift Squadron (MAS) at Kadena with six C-12Fs maintained by a civilian contractor. Initially operating with only two aircraft gained from Kadena's deactivated OSA detachment, the 13th MAS became fully operational with all six aircraft by January, 1988. CINCPACAF

was given operational control of the 13th MAS through the Pacific Commander of Airlift who is also the commander of the 834th ALD. Mission directive authority belonged to HQ PACAF/LG and actual mission tasking or fragging was vested in the PLSC commander and exercised by the PLSC/LRC.

From October 1987 to March 1988, the PDS grew rapidly as assets became available and the PLSC/LRC integrated the system into existing PACAF logistics practices. Before PDS, average transport time between PACAF bases and the PLSC was approximately four days. The PACAF goal for the new system was to reduce this time to 18 hours.(9)

PLSC managed spare parts became the primary beneficiary of the newly implemented PDS although MAC and sister services also used the system. The PLSC/LRC developed a regular PDS weekly schedule based on historical user requirements and on filling the gaps left by regularly scheduled MAC C-5, C-141, and C-130 channel missions. Prior to each scheduled PDS mission, the LRC would assess unit movement requirements and MAC channel schedules to either validate, adjust, or cancel the mission. These missions were then provided to the 834th ALD Pacific Airlift Control Center which monitored each mission through the airlift implementation and monitoring system (AIMS) and its various base level MAC command and control centers. This capability enabled rapid changes to current enroute missions maximizing airlift flexibility and responsiveness.

If the LRC needed to generate a mission, the 13th MAS could launch 14 hours after notification. This provided time for placing a crew in the required 12 hour premission crew rest, generating an aircraft, and performing premission duties. There was an option of putting aircrews and aircraft on alert which reduced response time to three hours from notification to home station departure. However, most last minute requirements were satisfied by rerouting an existing PDS mission thereby providing immediate support.

Mission effectiveness was not measured solely by the percentage of cargo fill on each sortie as is normally done for MAC airlift sorties. Instead, the focus was on where the critical needs were for grounded aircraft and delivering the MICAP parts there as soon as possible. Considering the cost of fighter aircraft, if a PDS mission carrying only one part could get one jet flying again it would be an efficient mission, especially during a contingency surge. Herein lies the cost effectiveness of the C-12F fleet. It would not be practical to divert or reschedule a C-130 or C-141 for the movement of only a few parts. Normally these parts would remain at the air terminal until sufficient tonnage accumulated to warrant a C-130 or C-141 sortie or until the next regularly scheduled MAC mission came through.

Standard operational and maintenance flying hour costs for the C-130 and C-141 are \$1860 per hour and \$2507 per hour respectively. The Kadena based C-12Fs operate at \$606 per

hour.(10) In addition, it takes at least five crewmembers to operate a C-130 or C-141 and only two for a C-12F. Ground support requirements are also considerably less for the C-12F at enroute stops.

The six PDS aircraft were originally part of a MAC owned and operated fleet of 40 C-12Fs performing the OSA mission. The OSA configuration accommodated eight passengers in the cabin with room for luggage in an aft cabin compartment. There was also a toilet facility in the rear of the aircraft. The PDS C-12Fs were locally modified by removing five passenger seats and relocating the toilet to the front of the cabin. The new PDS configuration accommodated three passengers and approximately 100 cubic feet of cargo. The three passenger capability was really a windfall realized by keeping a forward bench seat used for aircraft miscellaneous storage and the toilet which could also serve as a seat.

The aircraft floor was protected by a plywood covering and a cargo door, 52 inches by 52 inches, was used for loading and unloading. Due to the light weight and bulky packing requirements of aircraft parts, experience proved most aircraft loads would run out of room well before the aircraft's maximum allowable weight limits were reached. The highest actual cargo load was less than 800 pounds due to this "bulk out" first phenomenon.

The base transportation and aerial port functions provided the link between supply and the aircraft. PDS cargo

was specially identified on the shipping label and received special handling. The PLSC/LRC had air transportation specialists who coordinated all phases of PDS cargo movement. Once processed into the aerial port, PDS cargo was handled separately from other general cargo. Some aerial ports even built a mock C-12F cargo template in the terminal which helped consolidate cargo and determine loading arrangements. This special handling reduced cargo processing time and quickly moved these high priority parts through the terminals.

Aerial porters delivered cargo to the aircraft and performed loading and unloading duties. Cargo usually consisted of cardboard boxes which were moved by hand and stacked on the cabin floor. There were three separate loading locations: the forward cabin, the cabin adjacent the side opening cargo door, and the aft baggage compartment. Cargo nets secured the boxes in the two forward areas and a webbing arrangement secured cargo in the aft compartment. A safety and access aisle was provided along the left side of the cabin from the cockpit to the rear cabin door.

This manual loading and unloading process was somewhat cumbersome when compared to MAC's normal palletized cargo handling system. Cargo bin configurations were studied and several ports experimented with forklifts and conveyor belts; but, a simple manual system proved best. Manual unloading operations took only minutes to transfer cargo from the aircraft to the back of a pickup truck or stepvan. The loading process

was more time consuming. Loading, arranging, and securing a full cargo load would normally take two aerial port specialists 30 to 40 minutes. Although the system is a bit more manpower intensive than MAC's normal large palletized movements, these high priority spare parts did move through the transportation system quicker.

The simplicity of the operation did pay dividends when PDS missions transited air bases where supporting aerial port functions were either closed or did not exist. These missions were usually last minute additions to pick up or deliver a limited number of MICAP's after duty hours. A lone duty controller and a pickup truck were all that was required. In some cases, the C-12F crew would leave the cargo with base operations where base supply would pick it up.

Beech Aerospace Services Incorporated (BASI), a civilian company, provides maintenance and material support for PDS C-12Fs under an existing worldwide AFLC managed contract. PDS BASI personnel are located at Kadena where they perform organizational, intermediate, and depot type aircraft maintenance. At enroute stops, transient alert or the aircrew performs marshalling and refueling tasks. If a PDS C-12F needs other maintenance enroute, Kadena BASI coordinates support with other BASI locations situated throughout the Pacific or sends a mechanic and parts, if required, for the necessary repairs.

The Kadena BASI operation is manned and supplied to maintain the six C-12Fs mission capable at least 85 percent of

the time. The contract covers the full spectrum of conflict up to and including general war and has provisions for deployments away from Kadena. The civilian mechanics maintain Air Force mobility requirements and have accompanied several PDS missions operating away from normal USAF installations.

Operationally, BASI normally generates three or four aircraft per day while the remaining C-12Fs undergo repair or periodic inspections.

In addition to providing highly responsive airlift capability for PACAF logistics, PDS also provides a windfall benefit to Air Force pilot management programs. The PDS monthly flying hour program was 450 flying hours which are a cost effective addition to other Air Force pilot experiencing programs. The Air Force assigns a higher proportion of undergraduate pilot training (UPT) graduates to MAC's OSA and PDS C-12F units than to major weapon systems. These young copilots gain flight experience in the C-12F and upgrade to aircraft commander or instructor status during their initial tour. These pilots then move on to more complicated weapon systems in MAC (C-5, C-141, or C-130) or SAC (B-1, B-52, KC-10, or KC-135) where their past C-12F experience translates into faster upgrades to aircraft commander.

Although the statistics are constantly changing, the following figures portray the significance of this experiencing process. A UPT graduate initially assigned to C-5's would upgrade to aircraft commander after 1200 C-5 hours which takes

roughly 35 months. In C-141's upgrade is after 1100 C-141 hours or roughly 26 months and in C-130's after 800 hours or again 26 months. A UPT graduate assigned to C-12Fs would normally upgrade after approximately 600 hours which in PDS takes about 15 months. (11)

The benefits are two fold. First, the pilot upgrades to aircraft commander quicker and has earlier opportunities to "command" airlift missions. This command responsibility helps build a solid experience and judgement base for more complicated weapon systems. Second, the C-12F can take a high ratio of UPT inputs and serve as a provider of experienced pilots. When assigned next to a major weapon system, these PDS pilots normally upgrade to aircraft commander in less than one year for C-130s and C-141s or two years for C-5s. This experiencing process provided by PDS airlift benefits pilot management programs.

The C-12Fs provided assured airlift for PDS as it was integrated into the PACAF logistics system. In its first month of operation, with only two aircraft available, the PDS moved 35 MICAP's plus 370 pieces of other priority cargo. The system expanded quickly as PDS users and supporters jumped on board. In March, 1988, the system moved 338 MICAP's and 501 pieces of high priority "999" cargo.(12) Even without a LOG C3 system, the assured airlift element of PDS was making a difference in the distribution and redistribution of high priority, critical weapon systems parts for PACAF.

Then in early 1988 two events brought PDS to a halt. First, the General Accounting Office (GAO) completed its report to Congress on PDS depicting a rather dismal picture of its capabilities. Second, PACAF's earlier decision to decentralize the intermediate maintenance support of the PLSC began taking form as repair equipment and personnel began moving out of Kadena to other PACAF bases. The end result was a Senate Appropriations Subcommittee report that prohibited continued development and operation of the PDS with C-12F aircraft. HQ USAF subsequently cancelled PDS in March, 1988.

CHAPTER 4
WHY WAS IT STOPPED?

Before outlining the consequences of this cancellation it would be beneficial to review the GAO findings. The investigation was generated by previous Congressional misgivings about the EDS and PACAF's initiation of its PDS. The chairman, Subcommittee on Readiness of the House Committee on Armed Services tasked the GAO for a review of PDS assessing whether it can effectively and efficiently satisfy its planned objectives.(13) Beginning in November, 1987, in only the second month of PDS operations, GAO representatives began their study in the Pacific theater. They published their final report on 30 March 1988 recommending "that the Secretary of the Air Force not resume developing PDS until it sought congressional authority and provided to the Congress a detailed analysis of the need for and benefits to be gained from having such a system." (14)

In its report the GAO correctly points out that the original PDS study focused on cargo movement primarily to and from the PLSC which has recently been deactivated. The deactivation was done as a defensive measure against an ever increasing Soviet threat in the Pacific and resulted in a loss of the economies provided by centralized, redundant repair capabilities. This partially negates the statistical data in the original study in 1984; but, the deactivation does not

contradict the PDS concept. For that matter, the different types and locations of PACAF fighter forces have also changed since 1984 and will undoubtedly change again. Holding true though is the PDS concept that well coordinated and responsive spare parts movements help generate otherwise grounded aircraft. Today this movement would primarily involve lateral support between tactical fighter bases or in wartime, between dispersed forces and their home station support.

The GAO also had misgivings about using C-12Fs for the PDS mission. The GAO reported "the Air Force selected an aircraft for PDS that is not fully capable of carrying out the assigned mission. The C-12F can provide only limited, emergency spare parts service, which can also be provided by similar administrative aircraft already operating in the theater." (15) The Air Force selected the C-12F because of its range and immediate availability at minimum cost. It was not a perfect solution but, as indicated below, it did fulfill most of the requirements. Its immediate availability without an acquisition cost greatly outweighed any shortcomings.

Beech Aircraft Corporation manufactured the Air Force C-12Fs as a version of its King Air 200-series. It was FAA certified with a 12,500 pound gross weight limitation primarily to keep it in a light weight aircraft category. This category provides better insurance rates for Beech's thousands of commercial aircraft owners and operators. The long distances and payloads in the Pacific theater sometimes require PDS C-12F

operations over this standard 12,500 pound gross weight. A heavy weight addendum provides operational guidance and performance data for gross weights up to 14,000 pounds. Flight Safety International, which trains C-12F pilots, considers the aircraft structure and engine performance very capable of 14,000 pound operations. The GAO report is overly concerned about these heavy weight operations. Many users, including the Air National Guard and USAF OSA units, have operated under the heavy weight addendum for selected missions long before PDS and without adverse consequences. Beech has since agreed with this assessment and amended the Air Force C-12Fs type certificate allowing 14,000 pound operations. GAO's criticism is now moot. Of course such operations require careful analysis of takeoff data, obstacle clearance criteria, and single engine performance like most other Air Force weapon systems.

The report also dwells on the original PDS aircraft specifications calling for 1,000 mile range with a 1,000 pound payload. Although the C-12F could meet this criteria, these original programming requirements have since been replaced with real world experience. In actuality, the heaviest cargo loads carried on PDS C-12Fs are less than 800 pounds due to "bulk out" whereas an OSA C-12F often carries up to 1,700 pounds when tasked for a full load of passengers. As far as range goes, the longest routine leg distance is 890 miles between Kadena and Yokota. Kadena to Clark comes in second at 850 miles with all other routine legs less than 700 miles. Of course the reality

of winds at altitude can skew the significance of pure zone distance criteria. On the bright side, in the winter months a loaded C-12F with the jet stream at its back can safely fly from Kadena to Misawa, a distance of 1300 miles. Of course a nonstop return trip at that time of the year would be impossible.

The GAO highlights several other C-12F constraints: no hazardous cargo capability, less than programmed cargo capacity, inability to carry some of the larger pieces of cargo and engines, and lack of originally requested avionics.(16) The C-12F is guilty on all counts; however, the significance of these shortcomings is over emphasized.

Hazardous cargo is not carried because there is no inflight emergency jettison capability, no loadmaster for monitoring the cargo inflight, and no full faced oxygen masks for cargo related emergencies. This precludes poisonous, explosive, corrosive, and radioactive cargo although some waivers have been granted. This limitation proved minor because an estimated less than one percent of all PDS spare parts fall into a hazardous cargo category.

PACAF relies on MAC C-130s and C-141s for these hazardous cargo movements and for the transportation of the vast majority of its supply requirements. In peacetime and wartime, MAC channel airlift is imperative to PACAF fighter operations. PDS airlift could never totally meet this requirement. Rather PDS is designed for providing highly responsive movement of a

relatively few vital aircraft spare parts when other MAC airlift is not readily available.

The critique of the C-12F's avionics is inconsequential. The GAO cites a lack of dual UHF radios, ground proximity warning system, and only one intercom as "well short" of the PDS program management directive.(17) This is an overstatement as the C-12F met almost all avionics requirements: a VLF/OMEGA global navigation system, IFF/SIF transponder, radar, TACAN, ADF, and dual VOR/ILS/DME navigation sets, HF, UHF, and dual VHF radios, dual flight directors, autopilot, cockpit voice recorder, and flight data recorder. The avionics capability is better than the C-130's in many respects and its shortcomings are not significant. It should also be noted that the two pilots that crew a C-12F sit approximately 18 inches apart and could easily communicate if their single intercom failed.

The GAO focused on the incomplete PDS Operational Test and Evaluation (OT&E) initiated by MAC to test C-12F operational effectiveness and suitability. (18) Unfortunately, PDS was terminated before completing the OT&E. Although statistical OT&E data was not computed, questionnaires from PDS users and operators reflected satisfaction with system performance. Six months of PDS experience proved the C-12F is quite capable of safely and effectively performing the PDS mission.

The GAO also questions the validity of operating PDS missions along the routes already serviced by regularly scheduled MAC channel flights.(19) This finding fails to grasp

the original PDS justification which was providing assured support in time of crisis or war. This "duplication" argument rests on several unpredictable assumptions.

The worse case scenario would be a contingency where all available theater airlift was concentrated on missions other than channel support. These could include higher priority unit moves, force projection, or other resupply type taskings. In this case, PDS C-12Fs would carry the brunt of all lateral support shipments till other airlift became available again.

Even in lessor scenarios where MAC can continue regularly scheduled service, the channel frequency enjoyed today during peacetime operations probably would not be available in times of crisis. This capability would be diverted towards unit moves and contingency resupply.

The original PDS study and actual experience recognizes the frequency of channel service is also a vital player. Even if PDS duplicates another MAC channel mission along a given route on a given day, there are still potential payoffs by operating the mission at the other end of the day. Equally important is the concept of training the way you will fight. If a peacetime PDS is to transition efficiently to a wartime footing, its users, operators, and supporters must stay proficient by operating the system in a peacetime environment.

The GAO performed their audit of PDS in its infancy without forward stockage or a LOG C3 system in place. The LOG C3 system was placed on hold earlier pending a thorough

evaluation of the EDS LOG C3 system. Their report questions the need for a PACAF unique system in light of these current problems. Instead, they proposed relying on the developing worldwide Air Force Stock Control and Distribution System (SC&D). (20)

The SC&D does not provide adequate lateral support information for responsive decisions. The programmed PDS LOG C3 will interface with and not duplicate the SC&D system. For PDS, the SC&D system must expand the data base for lateral supply information. Such a system provides lateral support visibility and is a key element in increasing PACAF's fighter readiness and sustainability.

Finally, and perhaps most significantly, the GAO reported that PACAF inaugurated the PDS before Congress had approved it as a "new start." The ramifications of this situation can only be appreciated by those "inside the beltway" and are beyond the scope of this article.

The GAO report and Congressional direction to cease PDS operations did not completely kill the PDS spirit. Although in March 1988, PDS was officially terminated, the warfighters in the Pacific had already recognized its real potential. The six C-12Fs were reconfigured for a primary OSA role with a six passenger capacity. One section of the cabin was left open for cargo which increases its OSA mission flexibility. Mission tasking authority transferred from the PLSC/LRC to PACAF's 5th Air Force (AF) operations at Yokota. Although the C-12Fs

are now OSA assets, cargo can still be carried as a DOD approved secondary mission.

After March, 1988, PDS advocates went back to work studying lateral support and LOG C3 requirements. The six C-12Fs remain at Kadena flying a split passenger and cargo mission. The PLSC has deactivated and its LRC, now called the Pacific Airlift Support Office (PASO), has moved to another unit on Kadena. There, it continues manually managing the movement of high priority spare parts. The PASO works closely with 5th AF on requests for OSA airlift when other MAC channel airlift is not available. There is no formal arrangement for 5th Air Force to support PACAF logistics requirements and the traditional OSA mission tends to favor moving people not boxes.

CHAPTER 5

IS THE PACIFIC DISTRIBUTION SYSTEM STILL BENEFICIAL?

PDS, as originally envisioned in 1984, is dead. Rising from its ashes is a revised distribution system concentrating on lateral support instead of a centralized PLSC operation. PACAF is squarely behind the concept that more responsive management of aircraft spare parts can generate more airplanes.

Following Congressional guidance, PACAF conducted a PDS study in 1989 analyzing the impact of frequent and assured transportation in relation to aircraft "break data" and the repair and resupply pipeline. It concentrated on the first several days of a conflict with PACAF fighter units surging and augmenting forces from the U.S. joining the battle. Its findings can be summarized in three areas: uncertainty in logistics planning, benefits of lateral supply and maintenance support, and operation of remote intermediate repair facilities.

Logistics planners are very competent at getting the right quantities of parts at the right places and at the right times: however, the system is not perfect. Despite heroic efforts, some parts become logistics failures and become extremely critical to a unit's readiness. The PACAF study looked at historical experience and concluded a "principle PDS payoff lies in rectifying logistics failures before they stifle a wing's ability to produce enough mission capable aircraft to meet its wartime mission." (21) It serves as an "insurance

policy or crisis response system" in dealing with dangerous and unpredictable supply situations. (22)

Of course, a fighter base may solve such logistics failures by cannibalizing parts. This practice of removing good parts from one aircraft to repair broken ones on another takes valuable manhours and is limited in its utility. Eventually, broken parts must be replaced or repaired for continued operations at that base. The PACAF study looked at lateral support in accomplishing these tasks and found that repair times and frequency of lateral support transport were critical factors. The results stated:

"No matter what repair times are achieved, increasing the frequency of transport can provide up to seven additional mission capable aircraft per wing in the latter part of the surge when they are needed....The NMCS condition of the units can be improved and dangerously burdensome levels of cannibalization can be brought under control if improved repair times can be coupled with responsive assured parts movement." (23)

In a contingency, fighter units disperse, augmenting forces arrive in theater, and existing repair facilities are subject to attack. The same threat that decentralized the PLSC is also applicable to base facilities. In the event a wing's repair capabilities are degraded or where fighters are operating at forward bases, a remote intermediate repair facility at another PACAF base becomes invaluable. The PACAF study concluded "If enemy attacks are successful early in the war in destroying the maintenance test sets of just one of PACAF's five wings, we could lose 24 aircraft within a few days for lack of

that capability." (24) Frequency of retrograde transport and replacement supply has also been proven critical. Here the C-12F excels as it can make many trips for the cost of one C-130 mission. Frequent and assured transportation of repairable and repaired parts takes on added significance when base repair facilities are impeded.

Another factor emphasizing the key role of lateral maintenance support is the Air Force's decreasing levels of war readiness materiel. Referencing PDS, CINCPACAF/CV wrote in a message to HQ USAF/LE:

"PACAF's wartime spares capability resides in WRSK/BLSS kits which range in fill from 58 to 85 percent.... Prospects for improvement are not good with projected five year defense plan funding in the range of 7 to 25 percent of actual requirements. Limited spares capability can be partially overcome through an effective distribution system such as PDS." (25)

The PACAF study still finds PDS beneficial and requiring the original three parts: forward stockage, LOG C3 system, and assured airlift. Forward stockage has taken shape as the Pacific Parts Store on Okinawa. Continued analysis will help ensure the proper parts are stocked for rapid aircraft repairs. PACAF has reevaluated the LOG C3 system and now supports USAFE's proposal for a low cost, low risk system standardized throughout the Air Force at base level. The system will satisfy base level peacetime and wartime asset allocation and distribution requirements. Finally there is the question of the six C-12Fs providing assured airlift.

The airplane issue centers on the availability of MAC resources to meet continuous movement requirements for mission critical spare parts during a contingency. There are those who argue there will be airlift shortages and those that argue such high priority movements will be satisfied. In either case, the recent reduction from 32 to 20 PACAF assigned C-130s can only further reduce theater airlift capability at the onset of a contingency. This reduction increases the significance of even the limited airlift capability of the PDS aircraft.

How these six C-12Fs are tasked is also important. Originally, based on theaterwide logistics needs, the LRC developed and controlled all PDS missions with some 834th ALD assistance. As an OSA resource, these aircraft are now tasked and controlled by an operations support office in 5th AF, again assisted by 834th ALD. PACAF's other two numbered Air Forces must go through 5th AF to use these aircraft. In addition, PASO coordinates theaterwide logistics needs with 5th AF for C-12F mission support.

This system could get exceedingly complicated in a contingency. For example, a critical logistics movement requirement comes into the PASO, at Kadena, which calls 5th AF, at Yokota, for support. If 5th AF approves the mission, they call the tasking to the C-12F unit back at Kadena. And all this is coordinated with the 834th ALD at Hickam. For C-130 lift, the PASO calls the 834th ALD which, if approved, calls the 374th Tactical Airlift Wing at Yokota for a C-130.

The original concept where mission tasking authority was vested in the PASO, collocated at Kadena with the C-12F squadron, was simple. The current situation relies heavily on long distance telephone communication but at least both the key players, the PASO and 5th AF have dedicated offices for C-12F operations. Expecting regular MAC C-130 and C-141 airlift to provide flexible and responsive service through the 834th ALD, which also orchestrates all airlift throughout the Pacific, is overly optimistic. This is especially so in a heavy tasking contingency environment with extensive high priority airlift requirements.

One final point concerning the cost of PDS C-12Fs is worth considering. There are no acquisition costs, the airplanes are already bought and deployed. Facilities for the aircraft, operations, and maintenance are being built at Kadena using Japanese funds under the Japanese facilities improvement program. The only U.S. budget costs are for personnel, operations, and maintenance. These costs amount to roughly five million dollars per year. Considering the F-15 costs approximately 32 million dollars, if the operation of this fleet of six C-12F's can generate just one airplane it will pay for itself six times over.

The concept of a specially managed, highly responsive distribution system operating alongside a much larger common user transportation network is not new. Federal Express and UPS Same Day Air have both been critical to American business

and DOD transportation requirements. In today's high tech, high speed world, business systems cannot afford downtime. The Air Force also cannot allow its expensive aircraft to sit on the ground and likewise cannot afford to stock large quantities of expensive spare parts. Specially managed, responsive lateral support is the key to increasing our warfighting capability as well as improving peacetime readiness. PDS could provide PACAF a "federal express" capability which complements MAC's tactical and strategic airlift capabilities.

CHAPTER VI

CONCLUSION

PDS can increase PACAF's combat capability by quickly identifying and moving those critical spare parts required to generate a NMCS fighter. The system promises to improve PACAF's combat capability by reducing the time between when a mechanic finds a defective part until a replacement part is made available. It provides options other than cannibalization and helps remedy known and unknown supply shortages. This improved mutual base support through enhanced spares redistribution and lateral repair is a force multiplier.

General Gregory, CINCPACAF from 1987 to 1988, was tasked with winning the air battle and providing air support during a conflict in the Pacific theater. He has described PDS as critical in providing logistics support for his fighter aircraft during wartime. In a letter to the Chairman of the Senate Committee on Appropriations, he stated:

"PDS was designed as an integrated theater logistics support system to provide visibility of theater assets and capability to redistribute critical spare parts to repair grounded aircraft. It will be a force multiplier. In peacetime it will support the readiness of over 300 fighter and support aircraft. But more importantly, in wartime, when other transport aircraft are more efficiently employed to move deploying forces, PDS will be available for timely movement of spare parts to sustain our fighter aircraft."
(26)

NOTES

1. AFLC/LMSC/SHE Report "Pacific Distribution System Life Cycle Cost Summary," HQ AFLC, Wright Paterson AFB, OH, 1 April 1987, pp. 1.

2. Briefing by Brigadier General Joseph K. Spiers, HQ PACAF/LG on the "Pacific Distribution System", given at Kadena Air Base, Japan, 2 October 1987.

3. AFLC/LMSC/SHE Report, pp. 1

4. Spiers.

5. Program Management Directive 6242, "Program Management Directive for Pacific Distribution System (PDS)", HQ USAF/LEYS, Washington D.C., 14 May 1986, pp. 2-5.

6. Study by PACAF/OA, Hickam Air Force Base, HI, subj: Wartime Movement Requirements of Aircraft Repairable Parts, 1983, pp. 1-3.

7. Letter, PACAF/OA to PACAF/LGX, Hickam Air Force Base, HI, subj: Analysis of Aircraft Quantity for the Pacific Distribution System (PDS), 29 October 1983, pp. 1-3.

8. Spiers.

9. Newspaper article in the Kadena Shogun, Kadena Air Base, Okinawa, subj: Air Force Cooperation Creates Better System, October 14, 1987, pp. 6.

10. "Cost Analysis: U.S. Air Force Cost and Planning Factors", Air Force Regulation 173-13, Washington: Department of the Air Force, 31 October 1989.

11. Telephone interview with aircrew training managers, HQ MAC, Scott Air Force Base, IL, 13 December 1989.

12. Briefing by Captain Les Teel. HQ PACAF/LGXP, on the "Pacific Distribution System" given at PACAF headquarters, Hickam Air Force Base, HI, 20 December 1988.

13. Report by the General Accounting Office to the Chairman, Subcommittee on Readiness, Committee on Armed Services, House of Representatives titled "Tactical Airlift - Issues Concerning Air Force Plans for Pacific Distribution System", Washington D.C., March 30, 1989, pp. 1.

14. Ibid., pp. 3.

15. Ibid., pp. 2.

16. Ibid., pp. 21-22.

17. Ibid., pp. 23.

18. Ibid., pp. 23.

19. Ibid., pp. 13-15.

20. Ibid., pp. 24-27.

21. Draft Report by PACAF/OA on "The Pacific Distribution System and its Benefits to PACAF in 1989", HQ PACAF, Hickam Air Force Base, HI, September 1989, pp. 6.

22. Ibid., pp. 6.

23. Ibid., pp. 11.

24. Ibid., pp. 2.

25. Message, Pacific Air Forces to Headquarters, U.S. Air Force, subj: GAO Report on the PDS, CV 080330Z June 1989.

26. Letter, commander Pacific Air Forces to chairman,
Committee on Appropriations, subj: Pacific Distribution
System, 15 June 1989.

GLOSSARY

ADF	Automatic Direction Finding
AF	Air Force
AFLC	Air Force Logistics Command
BLSS	Base Level Supply Sufficiency
CINCPACAF	Commander in Chief Pacific Air Forces
CV	Vice Commander in Chief
DDN	Defense Data Network
DLA	Defense Logistics Agency
DME	Distance Measuring Equipment
DOD	Department of Defense
FAA	Federal Aviation Administration
GAO	General Accounting Office
GSA	General Services Administration
HF	High Frequency
IFF	Identification Friend or Foe
ILS	Instrument Landing System
LG	Deputy Chief of Staff for Logistics
LE	Deputy Chief of Staff for Logistics and Engineering
LOG C3	Logistics Command, Control, Communication
LRU	Line Replaceable Unit
MAC	Military Airlift Command
MICAP	Mission Capable
NMCS	Non Mission Capable for Supply

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OA	Office of Analysis
OSA	Operational Support Airlift
OT&E	Operational Test and Evaluation
PACAF	Pacific Air Force
PDS	Pacific Distribution System
SIF	Selective Identification Feature
SRU	Shop Replaceable Unit
TACAN	Tactical Air Navigation
UHF	Ultra High Frequency
UPS	United Postal Service
UPT	Undergraduate Pilot Training
VHF	Very High Frequency
VLF	Very Low Frequency
VOR	VHF Omnidirectional Range
WRSK	War Readiness Supply Kit